

TITLE : 유한차분해석

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```

1 clear all;
2 clear all;
3 clc;
4
5 n=5;
6 w=4;
7 h=4;
8
9 x = linspace(0,w,n);
10 y = linspace(0,h,n);
11
12 T=zeros(n); % 5*5 배열을 모두 0으로 생성
13
14 T(1,1:n) = 100; % top
15 T(n,1:n) = 30; % bottom
16 T(1:n,1) = 0;
17 T(1:n,n) = 70; % right
18
19 tol = 1e-6;
20 error = 1;
21 k = 0
22
23 while error>tol
24     k = k+1;
25     T_old = T;
26     for i = n-1:-1:2
27         for j = 2:n-1
28             T(i,j) = 0.25 * (T(i,j-1) + T(i-1,j) + T(i+1,j) + T(i,j+1));
29         end
30     end
31     error = max(max(abs(T_old-T)));
32 end

```

k =

25

T_old =

| | | | | |
|---|----------|----------|----------|---------|
| 0 | 100.0000 | 100.0000 | 100.0000 | 70.0000 |
| 0 | 50.0000 | 68.7500 | 75.0000 | 70.0000 |
| 0 | 31.2500 | 50.0000 | 61.2500 | 70.0000 |
| 0 | 25.0000 | 38.7500 | 50.0000 | 70.0000 |
| 0 | 30.0000 | 30.0000 | 30.0000 | 70.0000 |

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26

T_old =

| | | | | |
|---|----------|----------|----------|---------|
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| 0 | 30.0000 | 30.0000 | 30.0000 | 70.0000 |

초 제반수해

최종년도



```

1 clear all;
2 clear all;
3 clc;
4
5 Px = 80e-4;
6 Py = 30e-4;
7 M0 = 20e-5;
8
9 I = 11.25e-12;
10 S = I/0.001;
11 E = 0.09e6;
12 L = 10e-3;
13
14 s = linspace(0,L,100);
15 ds = s(2) - s(1);
16
17 th = zeros(size(s));
18 bd = zeros(size(s));
19 x = zeros(size(s));
20 y = zeros(size(s));
21
22 for j = 1:10
23     for i = 2:length(s)
24         th(i) = th(i-1) + (M0 - Px*(y(end)-y(i-1)) + Py*(x(end)-x(i-1)))*ds/(E*I);
25         bd(i) = (M0 - Px*(y(end)-y(i-1)) + Py*(x(end)-x(i-1)))/S;
26         P = sqrt(Px*Px + Py*Py);
27         x(i) = cos(th(i-1))*ds + x(i-1);
28         y(i) = sin(th(i-1))*ds + y(i-1);
29     end
30 end
31
32 plot3(x,y,bd,'-ob')
33 axis([0 L -L L])
34 xlabel('x [m]')
35 ylabel('y [m]')

```

